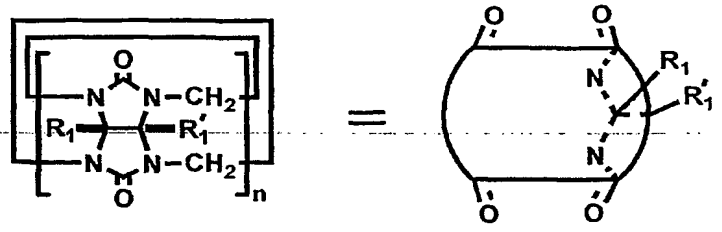
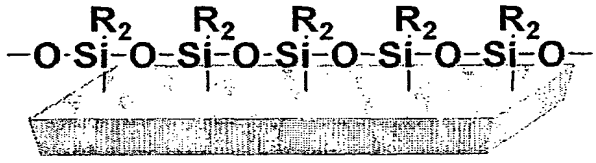
CLAIMS

1. A cucurbituril derivative-bonded solid substrate in which a cucurbituril derivative of Formula 1 below is covalently bonded to a modified solid substrate of Formula 2 below:



(1)

wherein n is an integer of 4 to 20, and R_1 and R_1' are each independently an alkenyloxy group with an unsaturated bond end and a substituted or unsubstituted alkyl moiety of C_1-C_{20}, a carboxyalkylsulfinyloxy group with a substituted or unsubstituted alkyl moiety of C_1-C_{20}, a carboxyalkyloxy group with a substituted or unsubstituted alkyl moiety of C_2-C_8, an aminoalkyloxy group with a substituted or unsubstituted alkyl moiety of C_2-C_8, or a hydroxyalkyloxy group with a substituted or unsubstituted alkyl moiety of C_2-C_8, and

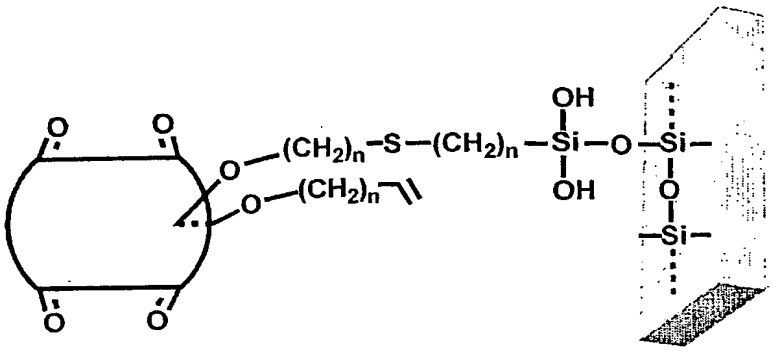


(2)

wherein R_2 is an alkyl group of C_1-C_{10} with an end functional group selected from thiol, amine, epoxy, isocyan, and isothiocyan.

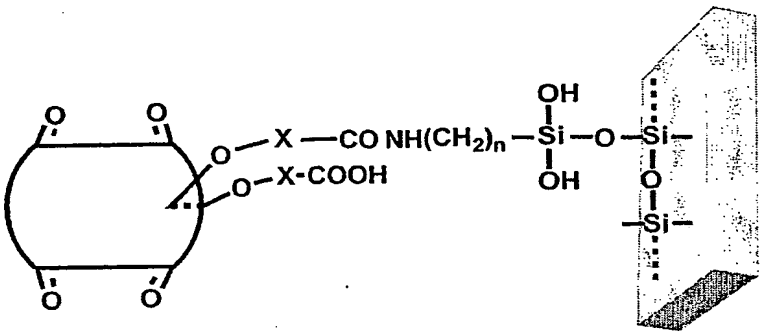
2. The cucurbituril derivative-bonded solid substrate of claim 1, wherein the solid substrate is a glass, a silicon wafer, an indium tin oxide (ITO) glass, an aluminum oxide substrate, or a titanium dioxide substrate.

3. The cucurbituril derivative-bonded solid substrate of claim 1, which is one selected from substrates represented by Formulae 3 through 6:



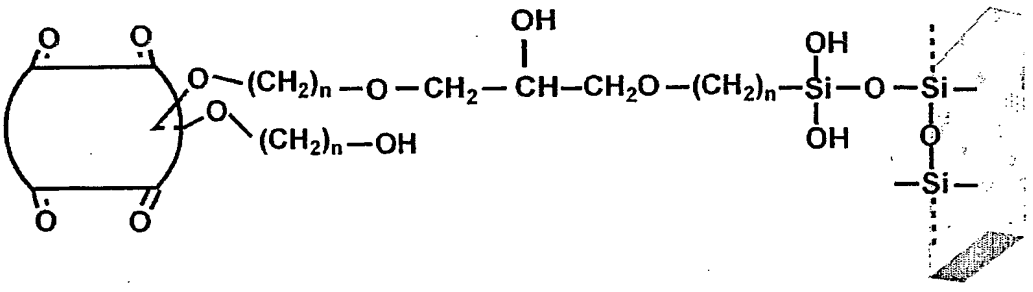
(3)

wherein each n is independently an integer of 1 to 20;



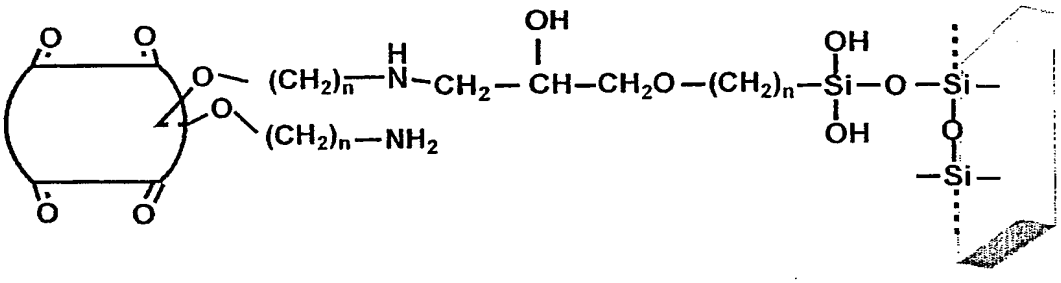
(4)

wherein n is an integer of 1 to 20 and X is a dialkylsulfide group with a substituted or unsubstituted alkyl moiety of C_1-C_{20} or a substituted or unsubstituted alkyl group of C_1-C_{20};



(5)

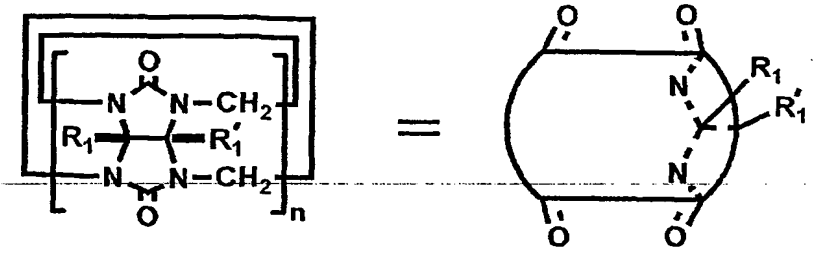
wherein n is an integer of 1 to 20; and



(6)

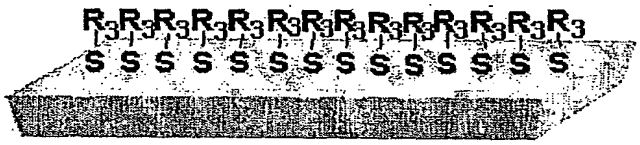
wherein n is an integer of 1 to 20.

4. A cucurbituril derivative-bonded solid substrate in which a cucurbituril derivative of Formula 1 below is covalently bonded to a modified solid substrate of Formula 7 below:



(1)

wherein n and R_1 are as defined in claim 1, and

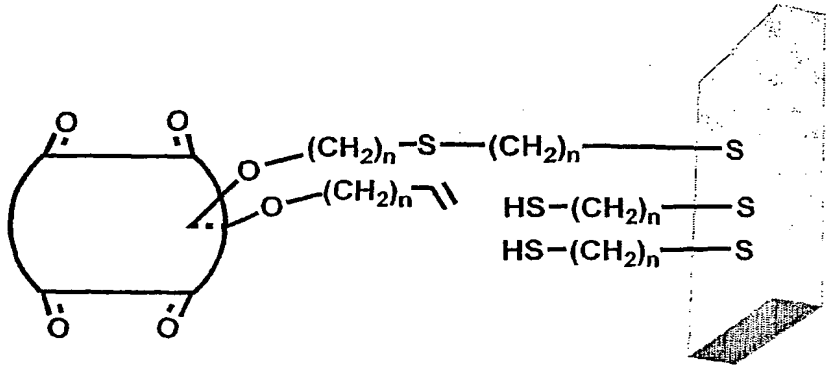


(7)

wherein R_3 is an alkyl group of C_1-C_{10} with an end functional group selected from thiol, amine, epoxy, isocyan, and isothiocyan.

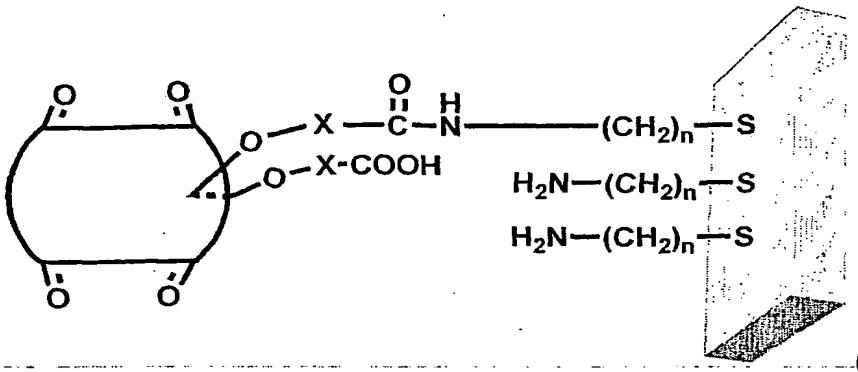
5. The cucurbituril derivative-bonded solid substrate of claim 4, wherein the solid substrate is a substrate made of gold, silver, platinum, or copper.

6. The cucurbituril derivative-bonded solid substrate of claim 4, which is one selected from substrates represented by Formulae 8 through 11:



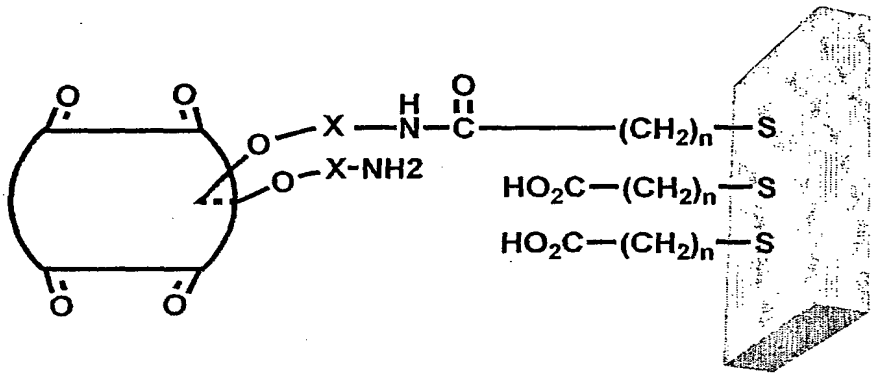
(8)

wherein each n is independently an integer of 1 to 20;



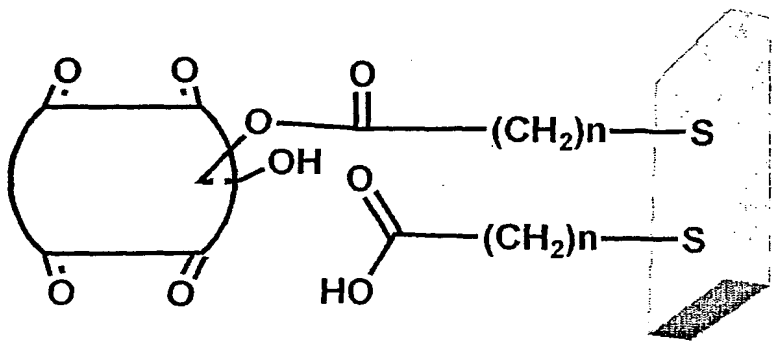
(9)

wherein each n is independently an integer of 1 to 20 and X is a dialkylsulfide group with a substituted or unsubstituted alkyl moiety of C_1-C_{20} or a substituted or unsubstituted alkyl group of C_1-C_{20};



(10)

wherein each n is independently an integer of 1 to 20 and X is a dialkylsulfide group with a substituted or unsubstituted alkyl moiety of C_1-C_{20} or a substituted or unsubstituted alkyl group of C_1-C_{20}; and



(11)

wherein each n is independently an integer of 1 to 20.

7. A protein chip comprising the cucurbituril derivative-bonded solid substrate of any one of claims 1 through 6.

8. A gene chip comprising the cucurbituril derivative-bonded solid substrate of any one of claims 1 through 6.

9. A sensor for biomaterial assay comprising the cucurbituril derivative-bonded solid substrate of any one of claims 1 through 6.